

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A data communication device, comprising:

a line state monitoring unit for detecting a line state relating to transmission quality in a—each of a plurality of communication lines and producing line state information indicating the line state of each communication line; and

D1 a transmission control unit including a plurality of operation modes for transmitting data over the—each communication line, wherein the transmission unit is configured to:

independently select, for each of the communication lines, a specific operation mode from the operation modes based on an error tolerance level, which is determined according to the line state information for the communication line produced by the line state monitoring unit, and

perform transmission control for continuously transmitting the data over the plurality of communication lines regardless of the line states detected by the line state monitoring unit according to the specific operation mode.

2. (Currently Amended) A data communication device according to claim 1, wherein the specific operation mode is changed to another operation mode for one of the communication lines by the transmission control unit in response to a change of the line state indicated by the line state information during the transmission of the data without suspending the transmission of the data, and the transmission control is performed for the transmission data according to the changed operation mode by the transmission control unit.

3. (Currently Amended) A data communication device according to claim 1, wherein:

the transmission control unit has a plurality of data multiplexing methods corresponding to the operation modes,

a specific multiplexing method is selected from the multiplexing methods by the transmission control unit according to the line state information produced by the line state monitoring unit for a corresponding one of the communication lines, the specific multiplexing method being an optimal one of the plurality of multiplexing methods for transmitting data according to the determined error tolerance level, and

pieces of transmission data, which are planned to be sent out to the corresponding communication line, are multiplexed with each other to a stream of multiplexed transmission data according to the specific multiplexing method.

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4. (Original) A data communication device according to claim 1, wherein the specific operation mode is changed to another operation mode corresponding to a high error tolerance level by the transmission control unit according to the line state information in cases where the line state information indicates a deteriorated line state, and the specific operation mode is changed to another operation mode corresponding to a low error tolerance level by the transmission control unit according to the line state information in cases where the line state information indicates an ameliorated line state.


5. (Original) A data communication device according to claim 1, further comprising:

an operation mode change request receiving unit for receiving an operation mode change request from a second data communication device and sending the operation mode change request to the transmission control unit to make the transmission control unit perform the transmission control for

the transmission data according to a particular operation mode indicated by the operation mode change request.

6. (Currently Amended) A data communication device, comprising:

a line state monitoring unit for detecting a line state relating to transmission quality in a—each of a plurality of communication lines and producing line state information indicating the line state of each communication line;

 a transmission control unit, including a plurality of operation modes for transmitting data over the—each communication line, the transmission control unit being configured to:

independently select, for each of the communication lines, a specific operation mode from the operation modes according to the line state information for the communication line produced by the line state monitoring unit, and

perform transmission control for continuously transmitting data over the plurality of communication lines regardless of the line states detected by the line state monitoring unit according to the specific operation mode; and

a line interface, connected with the communication lines, for sending the transmission data to the communication lines,

wherein the transmission control unit controls the line interface to add a new communication line connected with the line interface, in cases where the specific operation mode corresponds to a high error tolerance level, and to disconnect the new communication line from the line interface in cases where the specific operation mode is changed to a low error tolerance level.

7. (Currently Amended) A data communication device according to claim 1, further comprising:

DC a line interface for receiving and sending the transmission data to/from the communication lines,

wherein the transmission control unit controls the line interface to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode.

8. (Currently Amended) A data communication device according to claim 1, further comprising:

a line interface for receiving the transmission data from, and sending the transmission data to, the communication lines,

wherein the transmission control unit controls the line interface to decrease a data transfer rate for data sending while increasing a data transfer rate for data reception by a degree of the decrease of the data transfer rate for data sending in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode.

9. (Currently Amended) A data communication device, comprising:

a line state monitoring unit for detecting a line state relating to transmission quality in a—each of a plurality of communication lines and producing line state information indicating the line state of each communication line;

a transmission control unit including a plurality of operation modes for transmitting data over the—each

communication line, wherein the transmission control unit is configured to:


independently select, for each of the communication lines, a specific operation mode from the operation modes based on an error tolerance level, which is determined according to the line state information for the communication line produced by the line state monitoring unit, and

perform a transmission control for continuously transmitting data over the plurality of communication lines regardless of the line states detected by the line state monitoring unit, ~~which is sent out to the communication line or is received through the communication line,~~ according to the specific operation mode, wherein the data is sent out to the communication lines or received through the communication lines; and

an operation mode change request outputting unit for requesting of a second data communication device, with which communication is performed through the communication lines, that an operation mode selected in the second data communication device is changed to the specific operation mode selected by the transmission control unit.

10. (Original) A data communication device according to claim 9, wherein the request of the operation mode change request outputting unit to the second data communication device is performed during the sending or reception of the transmission data without suspending the sending or reception of the transmission data.

11. (Previously Presented) A data communication device according to claim 9, wherein:

 the transmission control unit has a plurality of data multiplexing methods corresponding to the operation modes,

a specific multiplexing method is selected from the multiplexing methods by the transmission control unit according to the line state information produced by the line state monitoring unit, the selected multiplexing method being an optimal one of the plurality of data multiplexing methods for transmitting data according to the determined error tolerance level, and

the operation mode change request outputting unit requests the second data communication device, during the transmission of the data without suspending the transmission of the data, to select the specific multiplexing method.

12. (Currently Amended) A data communication device according to claim 9, wherein the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to an operation mode corresponding to a high error tolerance level in cases where the line state information produced by the line state monitoring unit indicates a deteriorated line state, and the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to an operation mode corresponding to a low error tolerance level in cases where the line state information produced by the line state monitoring unit indicates an ameliorated line state.

13. (Currently Amended) A data communication device according to claim 9, further comprising:

an operation mode change request receiving unit for receiving an operation mode change request from the second data communication device, and sending the operation mode change request to the transmission control unit to make the transmission control unit perform the transmission control for at least a portion of the transmission data, which is received through at least one of the communication lines or is sent out to at least one of the communication lines, according to a

particular operation mode indicated by the operation mode change request.

14. (Currently Amended) A data communication device according to claim 9, further comprising:

a line interface, connected with the communication lines, for receiving transmission data from or sending the transmission data to the communication line,

wherein the transmission control unit controls the line interface to add a new communication line connected with the line interface, in cases where the specific operation mode corresponds to a high error tolerance level, and to disconnect the new communication line, which is connected with the line interface, from the line interface in cases where the specific operation mode corresponding to the high error tolerance level is changed to that corresponding to a low error tolerance level.

15. (Currently Amended) A data communication device according to claim 13, further comprising:

a line interface, connected with the communication lines, for receiving or sending the transmission data from/to the communication lines,

wherein the operation mode change request receiving unit further receives a communication line adding request or a communication line disconnecting request from the second data communication device, the operation mode change request receiving unit sends the communication line adding request or the communication line disconnecting request to the transmission control unit, the transmission control unit controls the line interface to add a new communication line connected with the line interface according to the communication line adding request and changes the specific operation mode to an operation mode corresponding to a high error tolerance level according to the operation mode change request, and the transmission control unit controls the line interface to disconnect the new communication line, which is connected with the line interface, from the line interface according to the communication line disconnecting request and changes the specific operation mode to an operation mode corresponding to a low error tolerance level according to the operation mode change request.

16. (Original) A data communication device according to claim 9, wherein the operation mode change request outputting unit requests the second data communication device to add a new communication line connected with the second data communication

device in cases where the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to an operation mode corresponding to a high error tolerance level, and the operation mode change request outputting unit requests the second data communication device to disconnect the new communication line, which is connected with the second data communication device, from the second data communication device in cases where the operation mode change request outputting unit requests the second data communication device to change the operation mode corresponding to the high error tolerance level to an operation mode corresponding to a low error tolerance level.

17. (Currently Amended) A data communication device according to claim 9, further comprising:

a line interface for receiving and sending the transmission data from/to the communication lines,

wherein the transmission control unit controls the line interface to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending, in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error

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tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data reception in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit to perform the transmission control for the transmission data received through a corresponding one of the communication lines according to the particular operation mode.

18. (Currently Amended) A data communication device according to claim 9, further comprising:

a line interface for receiving and sending the transmission data from/to the communication lines,

wherein the transmission control unit controls the line interface to decrease a data transfer rate for data sending while increasing a data transfer rate for data reception by a degree of the decrease of the data transfer rate for data sending, in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error

tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and to decrease a data transfer rate for data reception while increasing a data transfer rate for data sending by a degree of the decrease of the data transfer rate for data reception in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error tolerance level in the transmission control unit to perform the transmission control for the transmission data received through a corresponding one of the communication lines according to the particular operation mode.

19. (Currently Amended) A data communication device according to claim 13, further comprising:

a line interface for receiving transmission data from, and sending the transmission data to the communication lines,

wherein the operation mode change request receiving unit further receives a data rate change request from the second data communication device, the operation mode change request receiving unit sends the data rate change request to the transmission control unit, the transmission control unit controls the line interface to increase a data transfer rate for

data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending according to the data rate change request, in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and the transmission control unit controls the line interface to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data reception according to the data rate change request in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data received through a corresponding one of the communication lines according to the particular operation mode.

20. (Currently Amended) A data communication device according to claim 9, wherein the operation mode change request

outputting unit requests the second data communication device to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending, in cases where the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and the operation mode change request outputting unit requests the second data communication device to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data reception in cases where the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission

data received through a corresponding one of the communication
lines according to the particular operation mode.
